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AUTHOR Stoker, Howard W.
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ABSTRACT

This report describes two studies, one comparing Florida students' performance to national norms on the General Educational Development (GED) tests, the other comparing performance on the GED tests and the Florida State Student Assessment Test, Part II (SSAT-II). In the first study, a representative sample of 1,200 high school seniors completed two of the battery of five tests of the GED in Spring 1984. Means and standard deviations for the five tests and intercorrelations among the five tests were calculated in order to compare the Florida data with the national data, which were based on a sample of about 700 high school students tested in the spring of 1980. The study found that Florida's seniors compare quite favorably. Mean scale scores were higher than the national norm on all tests and noticeably higher on the science and mathematics tests. Performance in the upper score ranges on the writing skills, social studies, science, and reading skills was slightly less than that of the national sample, but from the midpoint down, Florida's seniors outperformed the national group. In the second study, the names of the students who had taken the GED test samples were matched to those students who had also taken the SSAT-II; a 79 percent match was found. Correlations, although sketchy, showed that it is fairly safe to predict that students who cannot pass the SSAT-II have little chance of passing the GED tests and hence that the GED tests are more difficult and do not represent an "out" for students who cannot earn a diploma in regular high school classes. (KC)

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RESEARCH BRIEF

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Comparative Performance of Florida Seniors on the GED Test Battery

Howard W. Stoker

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INTRODUCTION

The State of Florida began awarding high school diplomas through the General Educational Development (GED) Testing Program in 1946. By 1951, any Florida resident, age 20 or over, could earn such a diploma. Today, the test may be available to eligible candidates, age 16 or over, depending on policies established by local school boards.

The content of the GED Tests is intended to represent a sample of the expected outcomes of four years of high school instruction. The GED Test battery, as revised in 1978, consists of 290 items in five subject areas.

In 1982–83, several questions were raised by Florida Legislators, and others, pertaining to who was taking the test and, in the case of high school age participants, what levels of ability were represented. Also of interest was the performance of Florida high school students on the tests, as compared to national norms and a comparison of performance on the GED Battery and the Florida State Student Assessment Test, Part II (SSAT-II).

This report describes two studies, one comparing Florida students' performance to national norms, the other comparing performance on the GED Tests and the Florida SSAT-II test.

NORMING STUDY

Of interest in this study was how Florida seniors would perform on the GED Tests. National norms exist, and Florida students participated in the 1980 norming study conducted by the GED Testing Service. Descriptions of the 1980 high school norming sample are found in Spille (1981a, 1981b). However, a question was raised regarding how seniors in Florida high schools would perform on the tests—would they do better or worse than the performance represented by the norms?

To investigate this question, a sample of seniors participated in a testing program in the spring of 1984. The students were located using a two-stage sampling procedure designed to provide a broad, representative sample of Florida's high school seniors. Using figures from 1982–83, the proportion of high school graduates in each of five geographic regions was determined. Within each region, all public schools enrolling seniors in 1983–84 were listed, with the approximate numbers of seniors noted. Schools were selected, randomly, from within each region and numbers of students to be tested were determined, using the proportions mentioned above. One restriction was that no school would be included where the number of seniors was less than 15. This was done so that testing, which was to be done by local GED personnel, could be done in an efficient manner.

Letters were sent to the principals of the sixty (60) high schools which had been selected, explaining the norming project and inviting their participation. Six schools elected not to participate and alternate schools from the region were selected and invited to participate.

Schools were asked to select the required number of students according to a random sampling procedure provided to them. The original sample included 1,578 students from 57 schools in 30 districts.

As is the case in any voluntary testing project, the number of students from whom usable test results were obtained was less than the number anticipated. The actual number tested was just over 1,200.

The distribution of students according to race and gender compare favorably with figures for the Florida high school population. Responses were obtained from 73% Caucasion, 16% Black, 10% Hispanic and the balance "other". There were approximately 46% boys and 54% girls who participated in the testing.

The proportions in the final sample were close to the anticipated figures in 3 of 5 regions. One region was below

Howard W. Stoker, Instructional Development & Evaluation, University of Tennessee, Center for Health Sciences, 8 South Dunlap, Memphis, TN 38163.

This study was conducted by the author under contract with the Bureau of Adult and Community Education, Florida Department of Education. The opinions expressed in this article are those of the author and should not be construed as the opinion or policy of the sponsor.

Copies of the full report (released in April 1985) are available from: Chief, Bureau of Adult and Community Education, Department of Education, Knott Building, Tallahassee, FL 32301

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expectation due to the drop-out of one district at a time which was too late to enable replacement. This allowed another region with large districts, to reflect a higher-than-expected proportion of the total sample. In general, the students who were tested represent a wide range of high schools throughout the state. All regions are represented, with approximately the proportions of seniors which they enroll. Large schools, small schools, urban schools and rural schools are represented. Hence, one would conclude that a representative sample of Florida's seniors was involved in the testing project.

Because of the length of the GED battery, the decision was made to ask each student to complete two tests rather than all five. This would limit the testing time to one full morning and would probably eliminate most of the motivational problems one would encounter if the students had been asked to complete all five tests. With five tests, there are 10 different pairs of tests which could be administered. These sets were defined and distributed over the State. Table 1 shows the numbers of students completing each set and each test. The order of testing in each pair was reversed so that one-half of the students who took the Science-Mathematics combination, for example, took the Science test first, the others took the Mathematics test first. Similar patterns were followed for the other pairs of tests.

TABLE 1

NUMBERS OF STUDENTS COMPLETING COMBINATIONS OF TESTS

	Writing Skills	Social Studies	Science	Reading Skills	Mathematics
Writing Skills		130	122	160	122
Social Studies			108	123	98
Science				118	113
Reading Skills					110
Totals for each test	535	462	458	509	443

Answer sheets were sent directly to the GED Testing Office in Washington, D.C. for processing. Printouts and a data tape were returned to the investigator. Since no student completed the entire battery, score reports for individuals and schools were not produced.

Results

Means and standard deviations for the five tests and intercorrelations among the five tests were calculated in order to compare the Florida data with the national data. The national data were based on a sample of about 700 high school students tested in the spring of 1980. Because of the differences in time, sample sizes and test forms, some differences were expected.

These data appear in Table 2. The comparisons among means and standard deviations are based on standard scores. Hence all Florida values are compared to the national mean of 50 and standard deviation of 10. For all tests, mean performance of Florida seniors exceeded that of the national sample and the variability of scores was lower. For the Writing Skills, Social Studies and Reading Skills tests, differences from the national norm are all less

TABLE 2

MEANS AND STANDARD DEVIATIONS FOR THE NATIONAL AND FLORIDA SAMPLES (STANDARD SCORES)

	National Sample	Florida Seniors				
		Writing Skills	Social Studies	Science	Reading Skills	Mathematics
Mean	50	50.8	50.8	51.4	50.7	52.6
S.D.	10	9.8	8.5	9.1	9.5	8.2
N	683	535	462	458	509	443

CORRELATIONS AMONG GED TESTS NATIONAL AND FLORIDA SAMPLES (STANDARD SCORES)

	Writing Skills	Social Studies	Science	Reading Skills	Mathematics
Writing Skills		.75 (130)	.76 (122)	.81 (160)	.74 (122)
Social Studies	.80		.80 (108)	.81 (123)	.80 (98)
Science	.76	.82		.78 (118)	.58 (113)
Reading Skills	.76	.79	.77		.68 (110)
Mathematics	.69	.71	.73	.69	

Values above the diagonal are correlations for Florida Seniors. Numbers in parentheses are sample sizes.

Values below the diagonal are correlations for the national sample, N = 683 for all values (see Whitney, D.R. & others. (1985, May) The Reliability and Validity of the GED Tests. (GEDTS Research Brief No. 6).)

than one standard score point. While the differences are statistically significant, that significance is due, largely to the sample sizes.

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Of particular note are the means for Science and Mathematics. The Science mean is 1.4 standard score units above the norm and the math mean is 2.6 units above the national norm. The content of these two GED Tests is, perhaps, closer to what Florida students have been exposed to than is the content of the other three tests. Regardless, there is little doubt that the mean performance of 1984 Florida seniors exceeds that of the 1980 national sample, particularly in Science and Mathematics.

The intercorrelations, also in Table 2, indicate that performance over the battery is similar to that shown for the national sample. In most cases, the differences are small

TABLE 3

COMPARISON OF NATIONAL AND FLORIDA PERCENTILES FOR SELECTED SCALE SCORES

Scaled Scores	National Percentile Ranks	Florida Percentile Ranks				
		Writing Skills	Social Studies	Science	Reading Skills	Mathematics
80	99	99	—	—	—	—
75	99	99	—	—	—	—
70	98	99	99	99	99	99
65	93	93	94	94	93	95
60	84	85	87	85	87	81
55	69	74	70	70	74	66
50	50	46	51	44	47	42
45	31	28	26	21	31	18
40	16	14	12	14	18	7
35	7	6	2	6	5	2
30	2	3	1	1	1	1
29	1	2	1	1	1	1
20	1	1	1	1	1	1

and all differences between the Florida and national values are statistically non-significant. The differences involving the Mathematics scores are noticeably higher than the comparable national values. The Math-Science correlation is the only value lower than its comparable national value. Since the Mathematics test standard deviation is much lower than the norm, the restricted range for the Mathematics test probably accounts for the observed differences.

Another method for comparing performance between groups is to examine relative percentiles. Table 3 presents such a comparison. Again, the national scale scores and percentile ranks are the same for all tests. One can select a scaled score for the national sample and observe the percentile rank for that score, which indicates the percent of students who scored below the selected score. Then, one selects one of the tests and determines the percentage of Florida students who scored below that score.

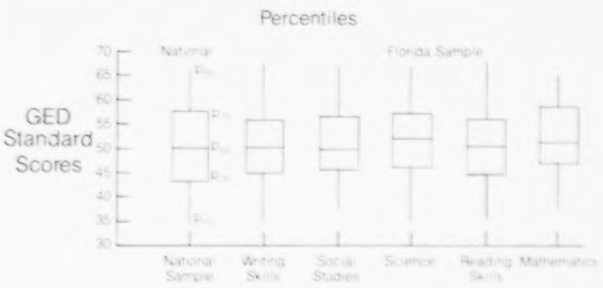
If the percentage of Florida students is less than the percentage for the national group, one concludes that Florida's students did better on the test.

For the Mathematics test, performance of Florida students *at the upper score levels*, representing the higher achieving students, is somewhat poorer than that of the norm group. For example, a scaled score of 60 for the norm group represents a point below which one expects to find 84% of the scores. For the Florida sample, the actual percentages were 85, 87, 85, 87, and 81 for the five tests. Hence, only for the Math test was the performance better at this point. From the *mid-point down*, (a scaled score of 50), representing the mid-level and lower achieving students, performance of Florida's students was better than that of the national group on all tests except Reading Skills.

Figure 1 depicts the information in Table 3 in a different fashion. The left hand scale represents the scaled scores. The left-most bar represents the performance of the national sample, which would be pictured the same for all tests. The thick bar represents a range for the middle 50%

FIGURE 1

Comparison of Selected Percentiles on GED Tests for National and Florida Samples



of the scores. The vertical lines above and below the bar extend to points which would represent the 95th and 5th percentiles, respectively.

Figure 1 shows, again, the higher mean performance and lower variabilities referred to earlier (Table 2). For each test, the range of scores for the middle 50% of students is less than the range for the national sample, being most compressed for the Mathematics test. The distances from the 75th percentile to the 95th percentile (P_{75} to P_{95}) are similar to the range for the national group, but the ranges for P_{25} to P_{05} are generally less than those for the national group. Again, the Mathematics test performance is an exception.

Summary

The question under consideration was how Florida seniors' performance would compare with that of the national norm group. In general, it appears that Florida's seniors compare quite favorably. Mean scale scores were higher than the national norm on all tests and noticeably higher on the Science and Mathematics tests. Performance in the upper score ranges on the Writing Skills, Social

Studies, Science and Reading Skills was slightly less than that of the national sample, but from the mid-point down, Florida's seniors out performed the national group.

Performance in the upper score ranges on the Writing Skills, Social Studies, Science and Reading Skills was slightly less than that of the national sample, but from the mid-point down, Florida's seniors out performed the national group.

Of particular interest is the cut-off score of 40 on the tests, which is used in determining eligibility for the GED diploma. For the national sample, this represents the 16th percentile, i.e., 16% of the group would be expected to earn scores below this point on each of the tests. For the Florida sample, the equivalent percentiles for the five tests—Writing Skills, Social Studies, Science, Reading Skills and Mathematics—were 14, 12, 14, 18 and 7. Hence, it would appear that Florida students are close to the national values expected at the cut-off score on Writing Skills and Science, find the Reading Skills test more difficult, and do better on Social Studies and Mathematics—much better on Mathematics—at the cut-off score.

SSAT-II STUDY

Another question had to do with how performance on the GED Tests would compare with performance on the Florida State Student Assessment Test, Part II. The SSAT-II is a test of "functional literacy" and Florida high school students must earn a passing score on this test in order to earn a diploma. The passing score is determined through a statistical equating process, but is roughly comparable to answering 70% of the items correctly. Would students whose scores were below the GED cut-off of 40 for each test earn "passing" scores on the SSAT-II? Would students who had low scores on the SSAT-II be able to meet the cut-off scores on the GED Tests?

To answer these questions, a computer tape containing the names of the 1,206 students who took part in the norming study was delivered to the Department of Education. The names on the tape were compared with SSAT-II test administration tapes for the appropriate period of time. Identical name matches were sought and comparable *first attempt* scores for students were recorded. A name match was found for about 60% of the students on the GED roster on the initial computer run. Printed lists were then produced and compared, visually. Names that were comparable were checked for birth date, gender and school membership. Students in the age range under consideration are notorious for changing first names, making exact matches on name only difficult—William becomes Bill, Elizabeth becomes Beth or Betsy, etc.

The matching process produced a total 946 matches out of the 1,206 on the GED list, about 79%. Theoretically, an SSAT-II score should have been available for all seniors. In all probability, those who were not matched were in school in other districts when they took the SSAT. The cost of searching many thousands of records in 67 districts was judged higher than the value of the records which would be found. The sample of matched records was judged adequate for the purposes of the study.

TABLE 4

PERCENTILE DISTRIBUTIONS
SSAT-II ITEM SCORES
FOR MATCHED SAMPLE

	Percentile Ranks	
No. of Items	Communications	Mathematics
60	99	99
59	81	97
58	56	89
57	40	80
56	31	73
55	22	66
54	17	60
53	14	55
52	12	50
50	9	41
48	7	35
46	5	29
44	4	25
*42	3.5	20
40	3	15
35	2	7
30	1	2

*Approximate cutoff point—70% of items

Results

Distributions were constructed to show the percentage of students who scored below various raw score points for the Communications and Mathematics subtests, in terms of items, since passing the SSAT-II is based on the percent of items answered correctly, translated into a scale score system. The distributions appear in Table 4.

As can be seen, the proportion who had passed the Communications subtest was about 96%; the proportion of students who had passed the Mathematics subtest was about 80%. The figures compare favorably with data from students who were tested prior to the spring of 1984, when a new version of the test was introduced.

Intercorrelations for the SSAT-II subtests and five GED tests were calculated and appear in Table 5. Intercorrelations, means, and standard deviations for this subgroup were compared with the values for the larger sample (Table 2). Correlations differed only slightly, values of .01–.05, and were not statistically different. Means and standard deviations were also close to those of the larger group and not significantly different. Hence, one would conclude that the students in the matched sample were a representative group from the larger sample.

The correlations between the SSAT-II subtests and the GED Tests are lower than one might expect. However, almost one-half of the students had Communications scores of 58, 59, or 60, the maximum, and 25% of the

TABLE 5

INTERCORRELATION MATRIX
SSAT-II SUBTEST SCORES
WITH GED SCALED SCORES

	Communications	SSAT-II Math	Writing Skills	Social Studies	Science	Reading Skills	Mathematics
SSAT-II Communication		624	47	36	45	55	25
Math	946		55	59	63	64	58
Writing Skills	398	398		79	76	83	79
Social Studies	369	369	94		77	80	79
Science	369	369	85	98		84	63
Reading Skills	392	392	129	89	89		65
Mathematics	357	357	89	84	98	85	

Values below the diagonal represent the number of scores on which the correlation is based.

students had Mathematics scores of 56–60. Since correlations are affected by a restriction in range for either variable, the high proportion of high scores undoubtedly led to the lower estimates of correlation. For the combination of the Communications subtest and the GED Mathematics test, there is a restricted range for *both* variables. The result is the low correlation of .25.

Given the size of the correlations between SSAT-II and the GED Tests, the conclusions one may draw are limited. Knowledge of how one performed on the SSAT-II does not allow one to make accurate predictions about performance on the GED Tests, or vice versa. However, the correlations are positive, though low, and it is fairly safe to predict that students who cannot pass the SSAT-II have little chance of earning a GED diploma.

Summary

The focus of this study was on the performance of Florida seniors on the SSAT-II and the GED tests. The SSAT-II is a criterion referenced, minimum skills, test. It produces score distributions which are skewed and which have restricted ranges. An analysis of the relationships points, fairly clearly, to the conclusion that students who cannot pass the SSAT-II are unlikely to succeed on the GED Tests. This conclusion agrees with that made in the first part of the study that students who are *taking and passing* the GED are not students who are failing in school (see Stoker, (1986). GEDTS. *Research Brief #9*). The earlier analysis showed that students with low scores on district level tests had low scores on the GED Tests. The later analyses show the same type of thing—those with low SSAT-II scores are unlikely to have GED scores high enough to allow them to get the alternate diploma.

An analysis of the relationships points, fairly clearly, to the conclusion that students who cannot pass the SSAT-II are unlikely to succeed on the GED Tests.

Finally, it should be noted that sudents who took the GED Tests and *failed*, i.e., *did not* have an average of 45 and no score less than 40, are not part of the GED samples used in this study. Students could have taken the SSAT-II and passed it while failing the GED Tests. Hence, one could easily conclude that the GED Tests are more difficult.

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